นิพนธ์ต้นฉบับ • Original Article

การวิเคราะห์รูปแบบภยันตรายทางออร์โธปิดิกส์ที่เกิดจากอุบัติเหตุบนท้องถนนในโรงพยาบาลชุมชน

เมธี แสงวิภาสนภาพร[1], ธรา ธรรมโรจน์[2], สมพล ฤกษ์สมถวิล[3]
[1] *โรงพยาบาลวิเศษชัยชาญ,*
[2] *ภาควิชาออร์โธปิดิกส์ คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น*
[3] *หน่วยศัลยศาสตร์อุบัติเหตุ ภาควิชาศัลยศาสตร์ คณะแพทยศาสตร์ศิริราชพยาบาล*

An Analysis of Orthopedic Injury Profiles of Pedestrian-Motor Vehicle in District Hospital

Matee Sangwipasnapaporn[1],Tala Thammaroj[2],
Somphon Lerksomtawil[3]
[1] *Sakolnakorn Hospital,*
[2] *Department of Orthopedic Surgery, Faculty of Medicine, Khon Kaen University, Khon Kaen*
[3] *Trauma Unit, Department of Surgery, Faculty of Medicine, Mahidol University, Bangkok, Thailand*

หลักการและเหตุผล: ปัจจุบันภยันตรายบนท้องถนนยังเป็นสาเหตุการตายอันดับที่สามของประเทศไทย พบว่าในผู้ป่วยกลุ่มนี้จะพบรูปแบบภยันตรายทางออร์โธปิดิกส์ร้อยละ 78 แต่ยังไม่มีข้อมูลที่ชัดเจนในกลุ่มผู้ป่วยอุบัติเหตุทั่วไป โดยเฉพาะความรุนแรงของภยันตราย การรักษา และการส่งต่อผู้ป่วยจากโรงพยาบาลชุมชนในโครงการสุขภาพถ้วนหน้า (โครงการ 30 บาท)

วัตถุประสงค์: เพื่อรายงานข้อมูลในผู้ป่วยอุบัติเหตุจราจร ในความรุนแรงของอุบัติเหตุ รูปแบบภยันตรายทางออร์โธปิดิกส์ ในโรงพยาบาลวิเศษชัยชาญ จังหวัดอ่างทอง ประเทศไทย

รูปแบบการศึกษา: งานวิจัยเชิงพรรณนา

สถานที่ทำการศึกษา: โรงพยาบาลวิเศษชัยชาญ จังหวัดอ่างทอง ประเทศไทย

วัสดุและวิธีการ: โดยการรวบรวมรายงานผู้ป่วยระหว่างเดือนมกราคม 2546 ถึง เดือนธันวาคม 2547 จำนวน 1268 ราย ที่ได้รับการรักษาเป็นผู้ป่วยอุบัติเหตุจราจรในแผนกฉุกเฉินของโรงพยาบาลวิเศษชัยชาญ ได้เก็บรวมรวมจากบันทึกเวชระเบียนผู้ป่วยอุบัติเหตุหลังจากการรักษาสิ้นสุด และได้แยกผู้ป่วยที่มีภยันตรายทางออร์โธปิดิกส์เพื่อการวิเคราะห์รูปแบบการรักษาในผู้ป่วยกลุ่มนี้เพิ่มเติม

ผลการศึกษา: อายุเฉลี่ยของผู้ป่วยอุบัติเหตุคือ 28±17.4 ปี (ระหว่าง 2 ปี ถึง 87 ปี) เป็นอุบัติเหตุมอเตอร์ไซด์ร้อยละ 75 โดยรวมทั้งที่เกิดขึ้นเองและจากการชนกับผู้อื่น สาเหตุอื่นๆ เช่น จาก

Background: Until now, traffic injuries are the third leading cause of death in Thailand. Orthopedic condition is the common problem (78%) of these patients. Accurate data are needed to evaluate the severity of trauma patients, therapeutic management and referral system in individual district hospital of universal health care policy (30 bath policy).

Purpose: To reviews the patient demographics, severity of injury and orthopedic injuries profiles of trauma patients in responsible area of Wisetchaichan hospital.

Study design: Descriptive study

Setting: Wisetchaichan Hospital, Uang-tong, Thailand

Patients and Methods: Between January 2003 and December 2004, 1,268 patients were designated as a trauma patient in emergency department of Wisetchaichan hospital. We collected data on all patients, by medical records and trauma registry reviews, retrospectively after discharge. Data from the patients who had the orthopedic injuries were analyzed especially in management and referral aspects.

Results: The average age of the patients was 28±17.4 years (range, 2 to 87 years). There were 584 male and

รถยนต์พบร้อยละ 7.5 จากจักรยานพบร้อยละ 5.5 มีผู้ป่วย 89 ราย (10.2%) ที่มีภยันตรายทางออร์โธปิดิกส์ จากการตรวจสอบพบว่าการรักษาในผู้ป่วยกลุ่มนี้มีความไม่สมเหตุสมผล 27 จาก 90 การวินิจฉัย โดย 10 รายได้รับการให้นอนโรงพยาบาลโดยไม่มีข้อบ่งชี้ที่ชัดเจน 17 รายได้รับการส่งต่อโดยไม่จำเป็น

วิจารณ์และสรุปผล: โดยสรุปพบว่าในผู้ป่วยอุบัติเหตุจราจรทั่วไปมีอุบัติการณ์ของภยันตรายทางออร์โธปิดิกส์ร้อยละ 10.2 แต่ผู้ป่วยกลุ่มนี้มีอัตราการถูกส่งต่อการรักษาสูง โดยแพทย์ที่ดูแลผู้ป่วยทุกท่านควรต้องคำนึงระหว่างการส่งต่อการรักษาโดยไม่จำเป็นกับการรักษาแบบไม่ถูกต้องของผู้ป่วยกลุ่มนี้

คำสำคัญ: ภยันตรายทางออร์โธปิดิกส์; อุบัติเหตุ; รูปแบบ

292 female patients. The most common cause of traffic injury was motorcycle accident (75%), include spontaneously occur and crush with the others. The other causes were car accident (7.5%) and bicycle accident (5.5%). Eighty-nine of 876 patients (10.2%) had significant orthopedic conditions. Twenty-seven of ninety were justified as an inappropriate management. Ten cases were admitted without a strong indication. Seventeen received unnecessary refer to the other hospital.

Discussion and Conclusion: In conclusion, significant orthopedic conditions were only 10.2% of all traffic injuries, but there were high referral rate. The balance between the mal-practice and unnecessary refer should be concerned for all physicians.

Key words: orthopedic injury; trauma; profiles

ศรีนครินทร์เวชสาร 2548; 20(4): 234-9 • Srinagarind Med J 2005; 20(4): 234-9

Introduction

Until now, injuries are the third leading cause of death in Thailand. In the United States, it is the leading cause of death in persons under age 44[1]. During 1 year, every tenth individual of the German population will have an injury caused by an accident[2]. Mortality is easily tubulated and indicative of the problem, but is not the only consideration. Each year, millions sustain non-lethal injuries requiring hospital care, which yields a one-third cost of total budget in district hospital. Accurate data are needed to evaluate the severity of trauma patients, therapeutic management and referral system in individual district hospital of universal health care policy (30 bath policy).

Orthopedic condition is the common problem (78%) of trauma patients[3]. Some require orthopedic management such as closed reduction of fracture or dislocation, debridement and internal fixation. All of these patients in district hospital were referred to the center hospital because no orthopedist in district hospital in spite of it is the basic requirement procedure in Thai medical council program. This report reviews the patient demographics, severity of injury, orthopedic injuries profiles of trauma patients and decision management of orthopedic patients in responsible area of Wisetchaichan hospital.

Patients and Methods

Data were obtained from the trauma registry and administrative database at emergency room in Wisetchaichan hospital, Uang-tong, Thailand. Between January 2003 and December 2004, 1,268 patients were designated as a trauma patient in emergency department of our hospital. We collected data on all patients, by medical records and trauma registry reviews, retrospectively after discharge. This administrative database included patientsí demographics, causes of accident, diagnosis and treatments. Three hundred and ninety-two patients were excluded from the study on the basis of incomplete medical records, leaving 876 patients, who made up the study population.

Data from the patients who had the orthopedic injuries were analyzed especially in management and referral aspects. Appropriate orthopedic management defined as a good decision with strong indication for treatment or refers. Inappropriate orthopedic management was the conditions that the doctor made the wrong decision of the treatment or referred the patient who required only basic orthopedic management for general practitioners.

Results

Demographic and Baseline data

The average age of the patients was 28±17.4 years (range, 2 to 87 years). The most common age interval was 11-20 years (Figure 1). There were 584 male and 292 female patients (Table 1). Six hundred and twenty-five patients were lived in the responsible area of our hospital; the others (251) were not. Twenty-two percent (134/613) of the patients did not wear the helmet between the accidents. Sixty-seven percent (163/242) of the patients had a clinical or history of alcohol drinking before the accident. The most common cause of traffic injury was motorcycle accident (75%), include spontaneously occur and crush with the others (Table 2). The other causes were car accident (7.5%) and bicycle accident (5.5%).

The common non-orthopedic diagnosis was abrasion wound (50.4%) and lacerated wound (21.5%). The overall mortality of out series was 0.8%. Alls dead before came to the hospital (Table 3).

Orthopedic injuries profiles

Eighty-nine of 876 patients (10.2%) had significant orthopedic conditions. Three patients were diagnosed multiple fractures, so there are ninety-two orthopedic diagnoses. The most common orthopedic diagnosis was fracture of the clavicle (24%). The others were metatarsal and phalangeal fractures of the foot and hand (14%, 8.7%). The most common fracture in upper extremity was fracture of distal radius.

Table 1 Demographic data of trauma patients

Variable	Number (patients)
Sex	
Male	584
Female	292
Age	
Means (±SD)	28±17.4
Helmet (no record=129)	
Wear	134
Not wear	613
Alcohol (no record=471)	
Drink	163
Not drink	242

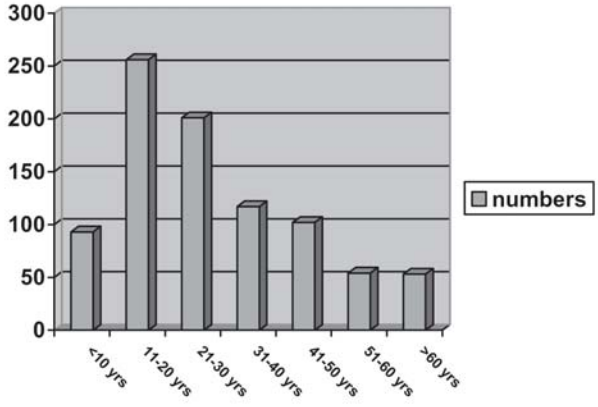

Figure 1 Schematic diagram shown age interval of the trauma patients.

Table 2 Causes of traffic accident

Type of victim's vehicle	Spontaneity	Crush with the other
Pedestrian	-	95
Bicycle	47	2
Motorcycle	452	216
Car	30	36

Table 3 Diagnoses of non-orthopedic conditions

Diagnosis	numbers
Abrasion wound	442
Laceration wound	188
Contusion	64
Head injury	41
Others	49

Forty-three cases (46.7%) were referred to Uang-tong hospital. The remains patients were treated at our hospital. Fifteen cases were admitted. The others were treated as an OPD cases. All orthopedic conditions were deeply reviewed by orthopedist, Thammaroj T. Inappropriate management defined as: First, inappropriate admitted indication: Second, unnecessary referral condition that require only basic orthopedic management, in the scope of Thai medical council program for doctor of medicine. Two of these 92 orthopedic diagnoses were not had

adequate information were excluded from the analyses. Twenty-seven of ninety were justified as an inappropriate management. Ten cases were admitted without a strong indication (Table 4). Seventeen received unnecessary refer to the other hospital. All of these patients can be treated by conservative means as OPD cases (Table 5).

Table 4 Orthopedic diagnoses and managements

Diagnoses	Managements			Decisions	
	OPD	Admit	Refer	Appropriate	Inappropriate
Lower extremity					
Knee ligaments injury			1	1	
Pelvic fracture			1	1	
Femur fractures			1*, 3	4	
Patella fracture			1✦	1	
Tibia fractures	1		3*, 2	3	1
Fibula fractures		1✦	1*	1	1
Tarsal fracture			1		1
Calcaneal fracture			1		1
Metarsal fracture	2	2	6	2	2°, 6
Phalangeal fracture	1		2*	3	
Upper extremity					
Humerus fractures	1		4	4	1
Radius fractures	4	3	1✦	7	1°
Both bone fractures			2	2	
Ulna fractures		2			2°
Hand and wrist					
Metacarpal fractures	2		1*, 1✦	4	
Phalangeal fracture			4*	4	
PIP jt. Dislocation	1			1	
Spine					
Cervical	2 (dead)	1	1	3	1
Others					
Clavicle fractures	15	1✦, 3	3	16	3°, 3
Rib fractures		1✦	3	1	1°, 3
Ankle sprains	5			5	
Shoulder dislocation		1			1°

*=open fracture, ✦ = admit or refer with other indication, °=admit without strong indication

Table 5 Inappropriate management in orthopedic patients and suggested management.

Diagnoses	Inappropriate Managements	Suggested management type: treatment
Tibia fractures	1+	OPD case: Long leg cast (children)
Fibula fractures	1+	OPD case: Protect weight bearing with or without cast
Tarsal fracture	1+	OPD case: Short leg cast
Metarsal fracture	2 °, 6+	OPD case: Short leg cast
Humerus fractures	1+	OPD case: U-slab
Radius fractures	1°	OPD case: Short arm cast
Ulna fractures	2 °	OPD case: Short or long arm cast
Cervical spine fracture	1+	Soft collar is not enough or wrong diagnosis
Clavicle fractures	3 °, 3+	OPD case: Figure of eight cast
Rib fractures	1 °, 3+	OPD case: pain control
Shoulder dislocation	1 °	OPD case: Closed reduction and velpeau strap

+ = unnecessary refer, ° = admit without strong indication

Discussion

Aim of our study was to provide the information of trauma patient present in one district hospital. Many epidemiological data such as age and sex did not significantly differ from the other studies. Some text books mentioned the incident of orthopedic conditions on poly-trauma patient was 42-78%[3, 7-9], but they did not mentioned about the incident of orthopedic condition in overall trauma patients. From this study, the incident of significant orthopedic condition was 10.2% in all traffic injuries in our responsible area.

Drug and alcohol use has become widespread among patients seeking care at urban trauma centers. The reported incidence of drug or alcohol use has ranged from 40 to 86% in urban trauma centers[4-6]. Despite of many campaigns from the government, the incidence of accident with alcohol use is still high; the same condition occurs with helmet wearing.

This study does have limitations. First, the study was performed using only one database at a single district hospital: whether these results are generalizable remains to be seen. Second, the interpretation of appropriate orthopedic management was subjectively interpreted by one orthopedist. Third, some referral reason was seeking for second opinion of the patientsí relatives.

In conclusion, significant orthopedic conditions were only 10.2% of all traffic injuries, but there were high referral rate. The balance between the mal-practice and unnecessary refer should be concerned for all physicians. The good practice guidelines and continuing medical education may be necessary for general practitioners to decrease the inappropriate management of trauma patients.

References

1. Wynn A, Wise M, Wright MJ, Rafaat A, Wang YZ, Steep G, et al. Accuracy of administrative and trauma registry database. J Trauma 2001;512:464-8.
2. Haas NP, Hoffmann RF, Mauch C, Fournier C, Sudkamp NP. The management of polytraumatized patients in Germany. Clin Orthop Relat Res 1995;318:25-35.
3. Swiontkowski MF. The multiple injured patient with musculoskeletal injuries. In: Bucholz RW, Heckman JD, eds. Rockwood and Green s fracture in adults. 5th ed. Philadelphia:Lippincott William & Wilkins, 2001;47-84.
4. Hutchinson DT, McClinton MA, Shaw Wilgis EF, Frisk-Millner N. Drug and alcohol use in emergency hand patients. J Hand Surg 1992;17A:576-7.
5. Lindenbaum GA, Carroll SF, Daskal I, Kapunish R. Patterns of alcohol and drug abuse in an urban trauma center: the increasing role of cocain abuse. J Trauma 1989;29:1654-8.

6. Levy RS, Hebert CK, Munn BG, Barrack RL. Drug and alcohol use in orthopedic trauma patients: a prospective study. J Orthop Trauma 1996;10:21-7.
7. Christian CA. General principles of fracture treatment. In: Canale TS , editor. Campbellí Operative Orthopedics. 9th ed. St Louis:Mosby-year book, 1992;1993-2041.
8. Siegel JH, Gonzalez SM, Dischinger PC, Read KM, Cushing BM, Badellino MC, et al. Causes and costs of injuries in multiple trauma patients requiring extrication from motor vehicle crushes. J Trauma 1993;35:920-31.
9. Gonzalez RP, Han M, Turk B, Luterman A. Screening for abdominal injury prior to emergent extraabdominal trauma surgery: a prospective study. J Trauma 2004;57:739-41.